IRT Blackbody Calibration Check Procedure (CALC)

I. Purpose:

The purpose of this procedure is to describe the steps performed by the RESET team to check the calibration of the IRT at the ARCS sites.

II. Cautions and Hazards:

None.

III. Requirements:

- This procedure must not be performed when it is raining or is likely to rain.
- Everest Interscience Portable Blackbody Calibration Source.
- Holder for blackbody source over mirror.

IV. Procedure:

A. Steps:

1. Notify data system personnel of calibration.
2. Turn the portable blackbody source on.
3. Wait 15 minutes until the blackbody temperature stabilizes.
4. Remove the IRT from the mirror system holder and hold the blackbody next to the IRT case opening.
5. If the readout temperature of the blackbody differs from the IRT readout by less than ±0.5° C, record values for both and stop.
6. If readout temperature of the blackbody differs from the IRT readout, repeat steps 4-6.
7. Point the IRT vertically at the sky and record the reading.
8. Replace the IRT in the mirror system holder and record this reading. If this reading and the reading directly looking at the sky differ by more than 0.5° C the gold mirror may need replacement.
9. Place the holder for the blackbody source over the mirror and record the temperature displayed by the blackbody and the temperature recorded by the IRT.
10. If the differences in temperature is greater than ±0.5° C in any of the above comparisons, notify the mentor.

11. If the mentor approves recalibration, follow the recalibration procedure in the IRT instrument manual.

V. References:

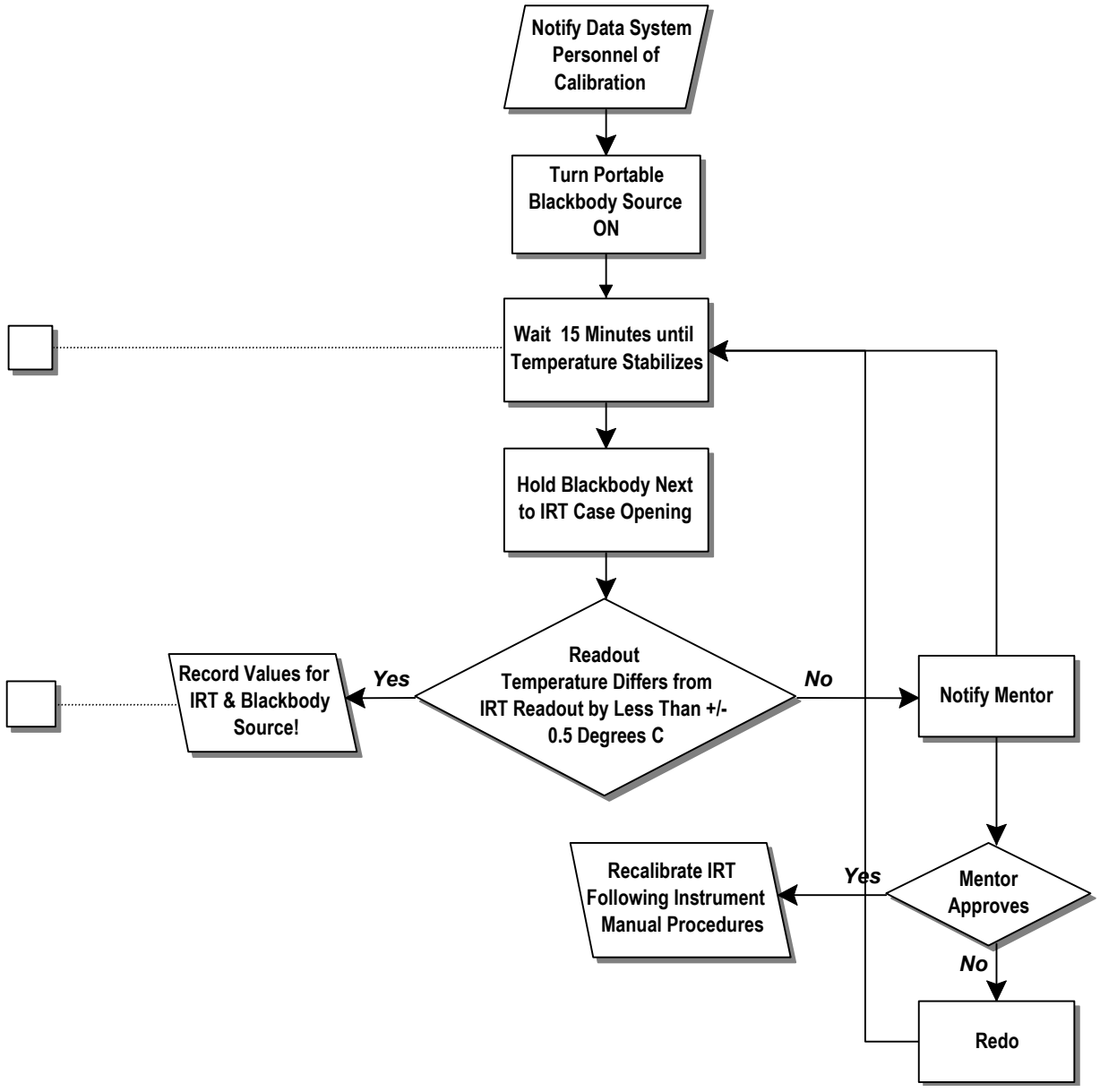
1. "Infrared Thermometer Installation, Operations and Maintenance Guide," PNL Report by J. Liljegren, 1994.
2. "Low Temperature Calibration Source Instrument Manual" by Everest Interscience, 1995.Heiman Opotoelectronics
3. IRT Instrument Manual.

VI. Attachments:

1. IRT Blackbody Calibration Procedure Flowchart
2. ARCS IRT Blackbody Calibration Check Form, FM(IRT)-001
3. Example of Completed Form

Attachment 1: IRT Blackbody Calibration Procedure Flowchart

CHECK BOXES



Attachment 2: ARCS IRT Blackbody Calibration Check Form FM(IRT)-001

ARCS IRT Blackbody Calibration Check Form

I. Calibration information

	Calibration	Calibration Check	Field Calibration
This is a (check which):		X	

Date:	GMT Begin Time:	GMT End Time:	ARCS #

Instrument / System:	TWP OMS Part Number(s):	TWP OMS Serial Number(s):
IRT SKYRAD	KT19.85	
IRT GNDRAD	KT19.85	

Location (eg. PNNL, Manus):	Participant(s):	Issued by:	Signature(s):

Reference Instrument(s):	TWP OMS Part Number(s):	TWP OMS Serial Number(s):
Everest Reference Blackbody	1000	
Everest Reference Blackbody	1000	

Current Configuration Version:	New Configuration Version:

II. Initial Values

Sensor/Element:	Reference Blackbody s/n 374	Reading at IRT	Reading at ADaM BB374	Reference Blackbody s/n 416	Reading at IRT	Reading at ADaM BB416 / IRT
IRT SKYRAD						
IRT GNDRAD						

III. Final Values

UNCHANGED: ☐ CHANGED: ☐

Sensor/Element:	Reference Blackbody	Reading at IRT	Reading at Adam
IRT SKYRAD			
IRT GNDRAD			

IV Statistics(if applicable)

No. of Samples:	Std. Dev.	CF Range %	Uncertanty %

V. Calilbration Change(if applicable)

Sensor or Parameter	Sensor Serial No.	Internal Resistance (Ohms)	Original Sensitivity (Volts/Unit)	Offset	Quadratic
	Old	Old	Old	Old	Old
	New	New	New	New	New
IRT GRNRAD					

Document(s) Referenced:	Document(s) Updated:
PRO(IRT)-005.001	

PROBLEMS:

NOTES:

Attachment 3: Example of Completed Form

ARCS IRT Blackbody Calibration Check Form

I. Calibration information

This is a (check which):	Calibration	Calibration Check	Field Calibration
		X	

Date:	GMT Begin Time:	GMT End Time:	ARCS #
6/30/00	20:20	22:00	2

Instrument / System:	TWP OMS Part Number(s):	TWP OMS Serial Number(s):
IRT SKYRAD	KT19.85	863
IRT GNDRAD	KT19.85	868

Location (eg. PNNL, Manus):	Participant(s):	Issued by:	Signature(s):
Nauru	Porch/Pendergast		

Reference Instrument(s):	TWP OMS Part Number(s):	TWP OMS Serial Number(s):
Everest Reference Blackbody	1000	416
Everest Reference Blackbody	1000	374

Current Configuration Version:	New Configuration Version:
GND V000705.cfg SKY V000629.cfg	

II. Initial Values

Sensor/Element:	Reference Blackbody s/n 374	Reading at IRT	Mal's IRT	Reference Blackbody s/n 416	Reading at IRT	Mal's IRT
IRT 863	22.3		22	21.9		21.9
IRT 863		23.1		23.1		
IRT 863	23.1	23.1		23.4	23.5	
IRT868	24.1	24.6		23.9	24.4	

Typical GND IRT value after reinstallation	Typical SKY IRT value after reinstallation
28.0 °C	20 °C

h Final Values

UNCHANGED: [X] CHANGED: [ ]

Sensor/Element:	Reference Blackbody	Reading at IRT	Reading at Adam
IRT SKYRAD			
IRT GNDRAD			

IV Statistics(if applicable)

No. of Samples:	Std. Dev.	CF Range %	Uncertanty %

V. Calilbration Change(if applicable)

Sensor or Parameter	Sensor Serial No.	Internal Resistance (Ohms)	Original Sensitivity (Volts/Unit)	Offset	Quadratic
	Old / New	Old / New	Old / New	Old / New	Old / New
IRT GRNRAD					

Document(s) Referenced:	Document(s) Updated:
PRO(IRT)-005.001	

PROBLEMS:
Screws holting SKYRAD IRT were so crroded that they had to be drilled out. Very time consuming. KT19 software was left at LANL had to use a combination of the displayed numbers and Mal's software.

NOTES: